

What is claimed is:

1 1. A process of dual damascene or damascene, comprising
2 the steps of:
3 providing an etching apparatus, a DCM(dry cleaning module)
4 machine and a wafer, the wafer having a metal line,
5 a stop layer, a dielectric layer, and a photoresist;
6 etching the dielectric layer in the etching apparatus to
7 form a via hole in the dielectric layer;
8 ashing the photoresist in the DCM machine with an
9 inductively coupled plasma; and
10 wet cleaning the wafer.

1 2. The process of claim 1, wherein the metal line
2 comprises copper.

1 3. The process of claim 1, wherein the dielectric layer
2 comprises low k material or fluorine-contained oxide.

1 4. The process of claim 1, wherein the ashing step uses
2 a reaction gas comprising O2, H2O, H2, NH3, N2, He, or Ar.

1 5. The process of claim 1, wherein the inductively coupled
2 plasma is generated by a dual-power tool which is disposed in
3 the DCM machine.

1 6. The process of claim 1, wherein the wet cleaning step
2 uses DHF or DI water as a cleaning solvent.

1 7. The process of claim 1, further comprising a step of
2 repairing the dielectric layer in the DCM machine.

1 8. The process of claim 1, further comprising a step of
2 removing the stop layer in the DCM machine.

1 9. The process of claim 1, further comprising a step of
2 cleaning the metal line in the DCM machine.

1 10. A process of dual damascene or damascene, comprising
2 the steps of:
3 providing an etching apparatus, a DCM machine and a wafer,
4 the wafer having a metal line, a stop layer, a
5 dielectric layer, a contact, and a photoresist layer;
6 etching the dielectric layer and the contact in the etching
7 apparatus to form a trench;
8 ashing the photoresist and the contact with an inductively
9 coupled plasma in the DCM machine; and
10 wet cleaning the wafer.

1 11. The process of claim 10, further comprising a step
2 of removing the stop layer in the DCM machine.

1 12. The process of claim 11, wherein the removing step
2 uses a reaction gas comprising C_xF_y , $C_xF_yH_z$, SF_6 , or NF_3 .

1 13. The process of claim 10, further comprising a step
2 of cleaning the metal line in the DCM machine.

1 14. The process of claim 13, wherein the cleaning step
2 uses a cleaning chemistry comprising O_2 or H_2 .

1 15. The process of claim 13, wherein the cleaning step
2 is performed at $-10^\circ C$ to $300^\circ C$.

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1 16. The process of claim 10, further comprising a step
2 of repairing the dielectric layer in the DCM machine.

1 17. The process of claim 16, wherein the repair step uses
2 H₂ as a repair chemistry.

1 18. The process of claim 16, wherein the repair step uses
2 halogen-silane as a repair chemistry.

1 19. The process of claim 10, wherein the metal line
2 comprises copper.

1 20. The process of claim 10, wherein the dielectric layer
2 comprises low k material or fluorine-contained oxide.

1 21. The process of claim 10, wherein the ashing step uses
2 a reaction gas comprising O₂, H₂O, H₂, NH₃, N₂, He, or Ar.

1 22. The process of claim 10, wherein the inductively
2 coupled plasma is generated by a dual-power tool which is disposed
3 in the DCM machine.

1 23. The process of claim 10, wherein the wet cleaning step
2 uses DHF or DI water as a cleaning solvent.